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NavMed 369

UNITED STATES NAVY

MEDICAL NEWS LETTER

Editor - Captain L. B. Marshall, MC, USN

Vol. 19 | 13 June 1952 Index Number | No. 12

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Radiation Safety for a Weapons Test

Within one hour after the detonation of an atomic bomb, a very elaborate radiation survey operation was set in motion. Monitoring teams started making measurements in the vicinity of "ground zero," in planes up to the radioactive cloud and down at about 50 feet above the ground, and at selected locations on the ground hundreds of miles from ground zero. In addition, 121 stationary monitoring installations at various points beyond 500 miles from the blast centers were set to record data.

This extensive operation had four principal goals: (1) protection of test personnel and populated areas, (2) safeguarding sensitive industries, (3) obtaining basic meteorological data and (4) collecting nuclear weapons effect data.

The bomb exploded was slightly larger than "nominal" - equivalent to more than 20,000 tons of TNT. It was dropped by a B-50 from an altitude of 30,000 feet and was detonated 3,500 feet above the ground. For such an air burst, the following conditions held.

1. Resultant Nuclear Radiation. This consisted of two types - initial and residual. The former is made up of gammas and neutrons, the latter of alphas, betas and gammas. The dosage from initial gammas varies (for a nominal bomb) from about 10,000 r at a distance of 2,100 feet from the explosion to less than 2 r at 9,000 feet. Initial neutrons which would have a lethal effect have a range of about 1/2 mile from the explosion. Residual radiation comes from fission products and unexploded fissionable material. The total gamma activity of the fission products varies from 820,000 megacuries at the end of 1 minute to 2.3 megacuries at the end of 1 month.

2. Radioactive Contamination. Past experience has shown that in the case of one nominal bomb, 0.02 % of the fission products were left on the ground within a radius of 2,000 feet from ground zero. The crew of a plane flying at 300 mph through a 6,200 foot diameter radioactive cloud at 15,000 feet would receive more than 140,000 r per hour 90 seconds after the explosion. Ten minutes later, in a 14,000 foot diameter cloud, the same crew would receive more than 3,000 r per hour at an altitude of 40,000 feet.

The function of the monitoring teams was to obtain data in the above two categories. To carry out this function, work was divided into three zones: (1) within 200 miles of ground zero, (2) from 200 to 500 miles out, and (3) beyond 500 miles.

Within 200 miles. Shortly after the bomb explosion, a small plane was sent in around ground zero to survey the area at about 50 feet above the ground. Very shortly thereafter, the plane flashed the "all-safe" signal, and 4 teams in Jeeps moved in with 0-to-50-roentgen gamma ion chambers to carry out a detailed survey. After this check was completed in about an hour, other test personnel were permitted to enter the area.

Several hours after the blast, 11 planes took to the air to do cloud sampling, cloud tracking and terrain surveying. The sampling operation is done by planes which circle through the radioactivity cloud out as far as 600 miles. Data are obtained to determine the safety of airways crossed by the cloud and to provide means

for evaluating weapon effects. Filter paper boxes are attached to the wings of the planes for collecting the weapons data, which are evaluated at Los Alamos.

The terrain survey is carried out by planes flying 50 feet above the ground. The principal instrument they use is an ion chamber which receives its samples through a 6 foot-long tube attached to the outside of the plane. This instrument can differentiate between activity on the surface of the ground and that in the air at the level of the plane.

200-500 Miles. Mobile teams use air samplers to make fall-out measurements on the ground under the radioactivity cloud. Samples are collected for periods of 20-120 minutes during the 48 hours after the explosion.

Beyond 500 Miles. One hundred and twenty-one Weather Bureau stations have been set up as stationary sample collection points. In addition to assisting the AEC, the Weather Bureau has effectively had a radiotracer means of getting data on the motion of large masses of air at varying altitudes. Besides providing meteorological data, this system is used as a guide for industries which might be sensitive to small amounts of radiation. (Nucleonics, May 1952, J. D. Luntz)

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Treatment of Acute Spinal Cord Injury

Traumatic injuries are a constant challenge to the practitioner of medicine. None is more distressing than cord injury resulting in paraplegia, with paralysis of sensation, locomotion, bowel and bladder, and sexual function. Until quite recently, these patients were considered to have a hopeless prognosis, chiefly because of complications leading to early death, such as urinary sepsis, decubitus ulceration and severe flexor spasms. However, the antibiotics, tidal drainage, blood transfusion, technics of rehabilitation and other developments have reversed this trend. For approximately 800 patients treated by the author, there has been a survival rate of more than 97 %, with a reasonable expectation that few more deaths will occur as a result of paraplegia alone. In this paper the phase of emergency definitive treatment which involves the general practitioner is outlined.

An unconscious patient or a patient complaining of back or neck pain should be treated as though he had suffered injury to the spinal cord. In this way, many patients with combined injuries may be spared the complete transverse traumatic myelitis which may be imposed upon them by over-solicitous attendants at the site of accident. The importance of careful handling of accident victims is stressed. It is difficult to estimate the number of patients who have had an initial insult exaggerated by improper early handling.

Fortunately, most patients with injury to the contents of the spinal canal are conscious. Questioning will usually bring out the presence of paralysis and loss of sensation. This can be verified by pinching the skin to establish the probable level of the lesion. The exactitude of this initial neurologic survey may be of little value in the court room, but it should permit one to decide what special methods for transportation are required. One should never give morphine or its substitutes to these patients, for they tolerate such drugs poorly; morphine also makes subsequent evaluation and treatment more difficult.

Diving into shallow water, vehicular accidents, and falls are the commonest causes of injury to the spinal contents. The most frequent sites of injury are the mid-cervical and dorso-lumbar areas.

If the patient can move his arms and not his legs, he has injury to the thoracic or lumbar spinal cord or cauda equina. He should be moved "in one piece" without change in the vertebral alignment. To accomplish such a removal may require the utmost ingenuity. Boards, sticks, rolled newspapers, overcoats, blankets, or other similar items can be utilized to achieve this end. The patient must never be transported in a sitting or semi-reclining position. The only acceptable position is fully extended with the face down. This position of natural extension may be sufficient to give bony realignment. The bone injury is distinctly secondary to the neural damage and should receive only minor initial consideration.

When the arms are also involved, the injury is to the cervical spinal cord. The most convenient method for immobilization of the head and neck is the Lewin necksplint, which is no more than a tapered roll of heavy cloth. Any cloth can be used as a substitute, wrapping it around the neck continuously until the bundle comes to the jutting end of the chin. If the neck is in a flexed position, careful traction should be used, with a slow pull to an extended position before application of the cloth splint. The patient needs someone to prevent flexion or rotation during movement and transportation. He should be transported recumbent in the face-up position and might need a blanket or coat under the shoulders to insure slight extension. In an occasional case, vomiting may require a face-down position.

If possible, word should be sent ahead to the hospital, indicating the probable time of arrival. It is important to handle the situation as the direst of emergencies, for the spinal cord does not usually recover from the effects of prolonged compression by bone or blood. Many patients benefit from an immediate laminectomy; this emphasizes the importance of having a qualified surgeon available to perform this operation shortly after admission of the patient to the hospital. It is imperative that catheterization of the bladder, using aseptic technic, be carried out at once. A note should be kept of the amount of urine obtained, and the urine should be examined for blood to detect direct injury to the urinary tract. The catheter should be anchored and should not be larger than a 16-French.

Under personal supervision of the physician, preferably without moving the patient from the stretcher, roentgenographic examination of the probable site of injury is the next step. In the interim, a rather complete physical examination should be made. The blood pressure is usually low, but one should not be misled into making a diagnosis of shock and into denying the patient possible surgical benefits, on this finding alone. Surgical or traumatic shock is almost never present in uncomplicated spinal cord injury.

Immediate laminectomy and debridement, or other procedures dictated by the findings at operation, which are desirable, demand experience in this procedure, for it requires little in the way of operative trauma to produce an irreversible, complete paraplegia. Mere inspection of the traumatic site offers little more than does blind manipulation - which is often worse than no treatment at all.

Closed manipulation for bony realignment has no place in the treatment of spinal cord injury. This statement requires elucidation. Many patients with good bony alignment never have return of function, and conversely, many who have poor bony alignment show return of function. It is merely a question of whether the spinal cord has sufficient room within the spinal canal and is not entered by bony spicules or compressed by protruded intervertebral disc material. Roentgenograms fail to give complete evidence as to the degree of neural damage and should not be relied upon for prognosis. One need only reduce one fracture-dislocation under direct vision and control to understand how easily manipulative trauma might aggravate the initial injury. Furthermore, the mere fact that spinal fluid will flow from a small bore needle inserted into the spinal subarachnoid space below the level of the lesion means no more than that there is at least that large a passage for the flow of spinal fluid. It gives no information about the situation at all points in the circumference of the lesion. Complete spinal fluid block means that the space remaining in the spinal canal is too small. This results only rarely from bony encroachment alone. It can result from pressure by protruded intervertebral disc material, ligamentum flavum, muscle trapped in recoil, extra or intradural blood, pulpified cord tissue, edema of the cord, rupture of the dura, or some combination of these with the bony displacement or bony spicules.

Some exceptions to this firm view must be presented. In the lower lumbar region, only spinal nerve roots are present, and closed manipulation stands little chance of adding damage. On the other hand, injury to spinal nerve roots is similar to peripheral nerve injury and should be treated as such. Newer procedures allow suture of severed spinal nerve roots. Debridement of blood and foreign tissue alone, with closure of dural tears, prevents the scarring which so frequently removes all possibility of functional return. Therefore, even in the lumbar area, there may be little place for closed manipulation.

The cervical canal is quite ample in area, and displacement alone must be extensive to compress the spinal cord. The injury has usually taken place with the neck in extreme flexion, and the resting position of the adjacent vertebral bodies may give little hint as to the severity of the trauma. When the initial trauma has been slight - as, for example, in most football or shallow diving injuries - the position of the bodies may well represent the full extent of their excursion. Usually, it is almost imperative, even in the absence of obvious bony displacement, to apply skull traction, with the head slightly extended. This is carried out most satisfactorily with Crutchfield tongs, or with some variation of this device. These are readily placed under local anesthesia by any physician, and every physician should familiarize himself with one of the methods. The only precautions necessary are to avoid piercing the inner table of the skull and to avoid placing the holes over the motor areas of the brain - which roughly lie straight above the ears. The weight applied at the start should be about 8 pounds, and should be gradually increased over hours or days, according to individual tolerance, until bedside x-rays show good bony alignment. The apparatus should be arranged to allow frequent turning of the patient. Unless recovery of function is noted very soon, further therapy may be required.

It is improper to ask the general practioner to carry the responsibility of care beyond the time when consultants are available. The patient should be turned "all in one piece" at two hourly intervals, day and night. His head should be supported to prevent rotation, and the head of the bed must be elevated for effective counter-traction. Halter traction is undesirable except for short periods, since the chin is immobilized and is subject to severe ulceration from the chin strap.

In the past, laminectomy carried such a high mortality that it had fallen into disrepute as a procedure of choice in acute traumatic paraplegia. Actually, the patient with uncomplicated spinal cord injury is an exceptionally good surgical risk, provided that the patient is arranged on the operating table for his comfort and not for that of the surgeon. Local anesthesia coupled with "vocal anesthesia" is the only really safe anesthetic agent, and imposes added gentleness - so necessary in these cases. A slam-bang laminectomy has no place, and the author has been a witness to dire consequences of faulty technic by flashy surgeons. Adequate blood replacement is mandatory. Cervical laminectomy is best conducted with skull traction in place. The Stryker turning frame is the simplest device for supporting the back. It is equally useful after laminectomy or in non-operative treatment. Carefully padded half-shells, blanket rolls located at the fracture site and placed beneath the mattress, or the bend in a surgical bed may be used to insure extension when the turning frame is not available. (GP, May 1952, L. W. Freeman)

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Cortisone, Adrenal-Cortical Atrophy and Surgical Deaths

Beyond doubt cortisone has proved a boon to many patients suffering from conditions heretofore without remedy or even effective palliative therapy. However, with the increased usage of this drug, certain undesirable side affects have become distressingly evident.

One of the more recently documented and disastrous effects of cortisone is its actualpotentiation of surgical shock under certain definite conditions. It has been obvious that cortisone therapy causes adrenal-cortical atrophy. However, it has not been generally appreciated that in dosage as low as 50 mg. per day, cortisone in a very few days may cause adrenal-cortical suppression which lasts for some weeks after the brief exhibition of the drug. This slow period of recovery from adrenal-cortical atrophy is usually uneventful to the patient unless he sustains a sudden "stress." This stress may seem relatively trivial: a simple fracture, an anesthetic or an infection. The inhibited, atrophic adrenal cortex by laboring at top speed can, with difficulty, maintain its role in the body economy. However, it is incapable of meeting the abrupt strain placed upon it by the stress reaction. Rapidly increasing and profound "shock" is the result - the shock of a severe, untreated Addison's disease under stress.

Two features of shock in the patient with adrenal-cortical suppression are of note: (1) The severity and depth of the shock syndrome are entirely out of proportion

to the injury or stress sustained. (2) The response of the patient to plasma, whole blood and vaso-pressor agents is completely unsatisfactory.

Death has resulted in several such cases from intractable "shock" following simple anesthesia and without operation. Death has also followed relatively minor trauma in patients with cortisone induced adrenal-cortical atrophy.

The treatment of such cases is both prophylactic and definitive. (1) By prophylaxis it is meant that every case receiving or who has recently received cortisone and in whom operation is indicated, cortisone should be administered in dosage of at least 200 mg. a day before and after surgery - gradually tapering off the postoperative dosage as indicated. (2) As definitive treatment, it is meant that the sudden onset of this rapidly fatal syndrome should be recognized or suspected for what it is. Urgent inquiry should be made, if possible, as to the recent, previous use of cortisone by the patient and if definite knowledge is not available or is positive, immediate parenteral therapy with cortisone in large amounts should be instituted. Therapy of this type has been almost miraculously lifesaving in several instances in which no response had been obtained to more routine measures.

Cortisone, it would seem, is to remain a part of the clinician's armamentarium for a long time. There is no reason to deny this medication, when indicated, because of the above mentioned "stress-shock syndrome"; but as the usage of the drug increases, it behooves physicians to bear this possible complication in mind. An awareness of this situation must be maintained if occasional fatalities are to be averted. (J. Iowa M. Soc., May 1952, Editorial)

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Use of the Anticoagulant Paritol C in Surgical Cases

The problem of minimizing the incidence of thromboembolic complications in postoperative patients is still one of major significance in all surgical clinics. The use of anticoagulant therapy is believed to be the best approach to the problem that has thus far been developed. Ideal anticoagulant therapy, combining prolonged reliable effectiveness, freedom from toxic side actions, simplicity of control and reasonable inexpensiveness, continues to tax the efforts of numerous investigators. The authors have recently investigated the clinical usefulness and safety of the synthetic anticoagulant agent, Paritol C (sodium polyanhydromannuronic acid sulphate) in patients following major surgery. This drug is a highly potent preparation which resembles heparin quite closely in structure. Presumably its mechanism of action is similar to that of heparin, acting as an antiprothrombin in inhibiting the conversion of prothrombin to thrombin.

Reports concerning the clinical use of Paritol C by Wright and associates indicate that the drug can be used safely for effective anticoagulant therapy, in a wide variety of conditions. The authors have been primarily interested in its use in those patients subjected to extensive operative procedures commonly associated with a high incidence of thromboembolic complications. Particular attention has been directed toward its safety in respect to the danger of hemorrhage from extensive raw surface areas. Accordingly, its postoperative prophylactic use has

been studied in only major cases such as gastrectomies, anterior and abdomino-perineal resections of the sigmoid and rectum, cholecystectomies, laminectomies and thigh amputations.

Method of Study. In this study, Paritol C was administered only by the intravenous route, though recently a new preparation has been developed which may prove satisfactory for intramuscular use. Dosages recommended by other investigators have varied from 3 to 5 mg. per Kg. of body weight. The lower dosage schedule used by the authors proved quite adequate, and in some instances it was possible to reduce this even further. The drug was supplied in ampules containing 10 cc. of a 10 % solution which was administered slowly into the vein using a small caliber needle.

Before starting Paritol C, the following laboratory studies were obtained in order (1) to detect insofar as possible any pre-existing abnormalities of the blood-clotting mechanism, and (2) to evaluate the kidney function, since impaired renal function has been reported to be a contraindication to its use: a complete blood count, platelet count, Lee-White clotting time, prothrombin time, urinalysis and blood urea nitrogen. In many cases several liver function tests were also obtained before and during a course of the drug.

In 50 patients, it was observed that, Paritol C raises the clotting time to effective levels for periods varying from 8 to 16 hours. The initial injection potentiates the action of subsequent injections as measured by the maximum clotting times obtained. After 1 to 3 days of continuous therapy the duration of effective action is prolonged from about 8 to 12 hours.

The drug has two principal drawbacks: first, it must be given intravenously, thus imposing a burden on the professional staff; and second, frequent determinations of the clotting time have been considered necessary for its control. The first mentioned disadvantage may soon be overcome with recently prepared preparations for intramuscular use. The necessity for rather frequent venipunctures causes a certain amount of discomfort for the patients.

As in the case of all anticoagulants, the drug carries the hazard of bleeding complications. The authors have seen one such major incident, gastrointestinal hemorrhage, possibly related to the anticoagulant, and one minor complication, a small wound hematoma. The incidence of toxic manifestations thus far observed has been small, and these have been of minor significance.

The drug when marketed will probably be relatively inexpensive as compared to heparin. The authors believe the drug merits extended clinical trial to further evaluate its properties and to make possible significant statistical studies on its effectiveness in the prophylaxis of thromboembolic disease. (Surgery, May 1952, M. M. Martin & T. Boles)

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The Association of Chronic Ulcerative Colitis and Pregnancy

The adverse effects of pregnancy on the course of chronic ulcerative colitis are well appreciated by clinicians. To advise a young woman who may be childless

to refrain from becoming pregnant because of the deleterious effect of pregnancy on chronic ulcerative colitis constitutes both a medical and a sociologic problem. In an attempt to determine the effect of pregnancy on chronic ulcerative colitis, and conversely, the effect of colitis on pregnancy, the authors made a careful study of 19 of 57 consecutive cases in which women were hospitalized for treatment of chronic ulcerative colitis, the patients having been pregnant at least once.

The average age of the patients in the 19 cases was 31.6 years, and the average duration of the colitis was 7.16 years. The diagnosis of chronic ulcerative colitis in all cases was confirmed by proctosigmoidoscopy and by roentgenologic examination of the colon. Associated pathologic complications of chronic ulcerative colitis occurred in 11 of the 19 cases, but they did not have any significant effect on pregnancy. None of the pregnancies was complicated by toxemia, glomerulonephritis, anemia, severe hyperemesis gravidarum, pyelonephritis or cardiovascular disorders.

In 15 of the 19 cases, colitis did not have any effect on pregnancy. Premature delivery occurred in 2 cases and spontaneous abortion occurred in 2 cases. In 5 of the 19 cases chronic ulcerative colitis improved in the course of pregnancy, and in 4 cases it became worse than it had been previously. No change in the colitis was observed in 4 cases. In 6 cases colitis started with the onset of pregnancy, particularly during the first trimester. A remission of colitis occurred in the postpartum period in 3 cases, and a definite relapse occurred in 5 cases. Conversely, in 3 of the 5 cases in which pregnancy appeared to influence favorably the course of the chronic ulcerative colitis, a relapse occurred in the postpartum period, and in 2 of the 4 cases in which a relapse of colitis occurred during pregnancy, a remission occurred in the postpartum period. It became apparent that the effect of pregnancy on the course of chronic ulcerative colitis is unpredictable, and that the effect of a previous pregnancy on colitis is an unreliable guide in attempting to predict the possible effect of a subsequent pregnancy on the course of colitis. It appears, therefore, that there is some justification in looking on pregnancy and the postpartum period as possible aggravating factors in cases of chronic ulcerative colitis.

There seems to be no explanation for the adverse effects of pregnancy on colitis, though mention has been made in medical literature of endocrine, metabolic, toxic and psychogenic factors. In this series of cases, the authors were unable to draw any conclusive information which would satisfactorily explain the physiologic effects of pregnancy on the course of chronic ulcerative colitis, and, on the whole they were unable to verify that psychoneurosis is a factor tending to cause a relapse of the colitis. In spite of precautionary measures such as diet, avoidance of physical overexertion and nervous tension, prophylaxis against respiratory diseases, adequate rest and the administration of some antibiotic or chemotherapeutic agent, the effects of pregnancy on the course of chronic ulcerative colitis remain unpredictable.

It is the authors' opinion that patients who have chronic ulcerative colitis should refrain from becoming pregnant unless a remission of the disease has been present for a long time. (Proc. Staff Meet., Mayo Clin., 23 April 1952, M. S. Kleckner, Jr., J. A. Bargen & E. A. Banner)

Triethylene Melamine in the Treatment of Neoplastic Disease

The therapeutic effect of triethylene melamine (TEM) on neoplastic disease as reported by Karnofsky and collaborators has been confirmed in 134 patients treated over a period of 18 months. The discovery of this chemical has permitted significant advances in practical therapy. Its effectiveness when given by the oral route and its relative freedom from disturbing side reactions, in contrast to nitrogen mustard, make optimally spaced and sustained therapy feasible. Its generalized action renders it an agent suitable for the treatment of diseases which involve tissues in widespread anatomic areas.

TEM has proved to be especially useful in the treatment of the chronic proliferative diseases arising from lymphatic tissue. Localized Hodgkin's disease and localized lymphomatous tumors continue to be best treated with roentgen irradiation. Combined local and systemic therapy is probably indicated in the majority of patients. In managing diffuse nonlocalized disease, TEM is a promising agent which may compare favorably with whole body irradiation and P_{32}. When the bone marrow is involved, as in chronic lymphocytic leukemia, the beneficial effect of TEM administration appears to surpass that of any other agent.

Although TEM may suppress the growth of normal bone marrow constituents to a very pronounced degree, its therapeutic effect in the myeloid proliferative diseases has been somewhat disappointing. In atypical and subleukemic granulocytic leukemia and in multiple myeloma the results have not been promising. The long term effect in polycythemia vera merits further study. In the small number of patients with chronic granulocytic leukemia in this series, the results seem to be inferior to those achieved by urethane. To evaluate the comparative merits of different therapeutic agents in this disease will require a large-scale cooperative study.

In acute leukemia, rapidly progressing malignant lymphomas, and in most nonhemopoietic tumors TEM therapy has been of little value. Worthwhile palliation has been observed in nasopharyngeal lymphoepithelioma and in ovarian papillary cystodemocarcinoma with metastases. Additional study of the effect of TEM on these tumors is indicated.

The critical problem in TEM therapy is the administration of therapeutically adequate amounts of the chemical while avoiding the serious hazards of overdosage. The correct dose cannot be forecast but must be determined empirically for each patient. The effective intravenous dose is one-fourth to one-half that of nitrogen mustard, or in adults 2 to 3 mg. daily for 2 to 3 days. Oral doses range from these amounts upward. The effective total dose of TEM during the first 1 to 3 weeks of treatment averages 15 to 25 mg. About 1 patient in 10 will develop temporary depression of bone marrow function when given as little as 8 to 12 mg. of TEM in a span of 5 to 7 days. A few may take 10 to 15 mg. per week almost indefinitely with little result. The reaction of an individual patient to given amounts fortunately remains relatively constant, except that increased sensitivity will occasionally develop after it has been used for some weeks or months.

The considerable variation in effective dose that occurs in different patients does not appear to be related to the type of disease they may have. Greater caution should be exercised, however, in those with pre-existing bone marrow

damage. The chemical decomposes when in contact with organic materials, and in an acid medium. Differences in dosage requirements may possibly be due to variations in gastric acidity or to the facility with which the chemical is absorbed. Tablets containing TEM should be given to patients in a fasting state with water, and perhaps with a buffering alkali, to minimize decomposition before absorption has taken place.

The initial oral dose of TEM should not exceed 2.5 mg. If this amount is well tolerated for 1 to 2 days, the dose may be increased to 5 mg. Although slight loss of appetite or nausea is a common occurrence, the appearance of severe anorexia, nausea, vomiting or diarrhea indicates overdosage, either from excessively large single doses or from a cumulative effect. The WBC should be determined before each dose is given. When the prevailing count falls abruptly, it is imperative that the administration of the drug be suspended immediately until the hematologic status becomes stabilized. The full effect of a given dose may not be manifest for 10 to 14 days. Anemia or thrombocytopenia rarely develops during prolonged therapy without antecedent depression of the leukocyte count. In the present group of patients serious depression of marrow function resulted from overdosage of TEM in 10 instances. This usually subsided fully and spontaneously in 2 to 6 weeks, but it may have hastened the death of 2 patients.

Harmful effects of TEM can be avoided only by carefully regulating the amount of the chemical given. If the difference between the toxic and therapeutic doses could be increased by the administration of a compound like cysteine the safety and utility of the chemical would be enhanced.

Once the initial effects of TEM have been produced and the approximate dose established for a given patient, the problem of maintaining a therapeutic effect and preventing relapse arises. The action of TEM, like that of nitrogen mustard, is transitory. Long remissions in the disease that respond to this chemical are scarcely to be expected after brief periods of therapy. In most patients continued evidence of disease activity make it necessary to give maintenance doses at intervals no greater than 1 to 2 weeks. TEM seems to be an agent that is well adapted for sustained therapy, apparently differing in this regard from another nitrogen mustard compound (R 48) that has been effective when given by mouth. Prolonged remissions have been maintained in some of the authors' patients with doses as small as 1 to 2.5 mg. per week. Others have required as much as 5 mg. twice a week.

How long the administration of TEM should be continued without interruption to obtain the best long-term results in different disease entities is a matter for further study. The authors' policy has been to maintain treatment for at least 5 to 6 months, even though signs of disease activity may disappear sooner, before therapy is suspended and evidence of relapse awaited. Many patients will probably require the administration of TEM at close intervals, indefinitely.

Deleterious effects from sustained therapy, other than temporary depression of bone marrow function, have not been observed. Patients treated for many months have maintained their optimal body weight, have not shown undue susceptibility to infection and have not developed abnormalities in serum protein constituents.

The availability of a chemotherapeutic agent such as TEM, which can be used with reasonable convenience and safety without cumulative damage to normal tissues, suggests the need for reconsidering some currently accepted opinions regarding the long term management of the chronic proliferative diseases arising from lymphatic tissues. It would appear desirable to suppress the objective manifestations of disease continuously, even in the absence of clinical symptoms, and to prevent, if possible, the development of complications such as bone marrow damage. The extent to which health and longevity can be prolonged by this means is a matter for continued study. (Blood, May 1952, R. W. Rundles & W. B. Barton)

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A Summary of Cardiac Neoplasms

Cardiac neoplasms, though rather uncommon in occurrence, may be present in both males and females at any age. Metastatic tumors are more common than those of the primary type and benign tumors are more frequently found than are malignant primary growths.

In addition to the diagnostic criteria listed in the summary which follows, other aids to diagnosis include: roentgenography, fluoroscopy, barium swallow, electrokymography, tomography, pneumopericardiography, angiocardiography, cytologic examination of pericardial fluid and roentgenkymograms, cardiac catheterization, and possibly, phonocardiography, ballistocardiography and various modifications of electrocardiography.

Malignant Tumors (sarcomas) are more frequent on the right side (auricle, interauricular septum or pericardium). Benign Tumors (myxomas) arise more frequently in the left auricle.

There may be no symptoms or signs and it may be impossible to reach a diagnosis. A tumor should be suspected when any of the following symptoms are present or when death occurs (8 and 10):

1. Unexplained or atypical, sudden, progressive, treatment-refractory congestive failure, especially in a young person.
2. Unexplained or atypical alteration in rate or rhythm and in the electrocardiogram, with tendency to rapid and sudden changes in the degree and type of aberration: heart block (Stokes-Adams syndrome), bundle branch block, nodal rhythm, auricular tachycardia, flutter or fibrillation, electrocardiographic findings suggestive of coronary occlusion or pericarditis.
3. Signs of atypical valvular disease, as mitral stenosis without adequate history of rheumatic fever; acquired pulmonic stenosis; tricuspid stenosis. Changes in findings with changes in position.
4. Suggestive subacute bacterial endocarditis without positive blood culture but with embolism.
5. Signs of unexplained obstruction to cardiac blood flow:
   a. Ball-valve action of tumor (often at mitral area), especially with position change and accompanied by severe dyspnea, cyanosis, unconsciousness, convulsions, etc.

b. Tricuspid area obstruction with no known cardiac or pulmonic cause but with murmurs, right-sided failure.

c. Superior vena caval obstruction with edema, cyanosis, venous engorgement of face and neck.

d. Inferior vena caval obstruction (ascites, leg edema, hepatomegaly, collateral circulation).

e. Cardiac tamponade by pericardial effusion or infiltration (falling blood and pulse pressures, tachycardia, pulsus paradoxus, dyspnea, engorged veins, hepatomegaly with friction rub, bloody pericardial fluid).

6. Roentgenographic findings of masses, contours, etc., not easily explicable.

7. Atypical anginal pains or suggestive coronary thrombosis.

8. Sudden death, especially without previous cardiac symptomatology.

9. Signs of malignancy elsewhere and changes in symptoms and signs as described in items 1 through 8.

10. Death from "noncardiac" cause in metastatic malignancy of unknown primary focus, with or without cardiac findings.

11. Mental retardation, adenoma sebaceum, congenital defects, convulsions with cardiac findings would suggest rhabdomyomatosis.

(Postgrad. Med., May 1952, M. Pfeiffer)

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Infectious Nondiphtheritic Croup

The authors' experience with 2,602 patients with nondiphtheritic infectious croup treated at Kingston Avenue Hospital (Brooklyn, N. Y.) during the years 1939-1950 permits the following conclusions:

1. Despite recent advances in antibiotic therapy, surgical intervention to relieve hypoxia is still frequently necessary in cases of nondiphtheritic infectious croup.

2. A classification of nondiphtheritic infectious croup based on the pathological changes involved has many advantages over classifications based on infectious etiological agents. Such a classification is described in full in the original article and each type of croup is discussed in detail with several illustrative cases. This classification, in use for over 10 years, has been found very satisfactory.

3. Patients with acute catarrhal laryngotracheitis can be managed by humidification of the air and antibiotic therapy. Patients with subglottic exudative and mechanical laryngotracheitis may require endoscopic aspiration of the exudate and mechanical removal of accumulated crusts. Most patients with subglottic edematous obstructive laryngotracheitis and supraglottic edematous obstructive laryngitis require tracheotomy. Patients with acute obstructive laryngotracheobronchitis, fortunately quite rare, require tracheotomy but are only partially relieved of hypoxia by this operation. Most of them still die in spite of treatment because of bronchial and bronchiolar obstruction. The O'Dwyer type of intubation was abandoned in favor of tracheotomy in 1941 because in the authors' hands

it was found to be a relatively ineffective method.

4. Pneumothorax and pneumomediastinum may occur as complications of the respiratory obstruction in croup. More frequently these complications are found after tracheotomy and should be suspected if hypoxia persists or reappears after establishment of an adequate airway. The incidence of these complications can be reduced by performing tracheotomy with a bronchoscope or other tube in situ which provides an adequate airway during surgery.

5. Observation of the principles discussed above, coupled with the use of antibiotics, has resulted in a marked reduction in case fatality and the necessity for tracheotomy in infectious nondiphtheritic croup in the past 10 years at Kingston Avenue Hospital. (A.M.A. Arch. Otolaryng., May 1952, J. G. Gilbert, J. Kasnetz, I. M. Rosenthal & L. Mazzarella)

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A Modified Fontana Technique for Staining Spirochetes in Smears

A modification of the original Fontana technic for staining spirochetes in smears has been employed during the past 2 years with consistently successful results. The relatively simple procedure can find its greatest usefulness in an office, clinic or field laboratory which does not have access to a dark-field microscope. The present communication, instead of describing a new technic, is actually re-emphasizing an old procedure which appears to have been lost in the medical literature of the past.

Modified Fontana Method. 1. Thin smears or contact imprints are prepared on clear glass slides and dried either in air or by gentle heating. If the smear is thick or the exudate contains many pus cells or tissue particles, the smear may be flooded after drying with a small amount of saline, stirred gently with a platinum loop, and then delicately blotted with fine filter paper. This removes many of the larger particles and tends to make a uniformly thin smear.

2. After drying in air or by gentle heating, fix the smears for 1 minute in Ruge's fluid (1 ml. glacial acetic acid, 20 ml. 40 % formalin, 100 ml. distilled water).

3. Wash in running water for 3 minutes, and rinse in distilled water.

4. Flood slide for 30 seconds with 5 % tannic acid (prepared in 1 % phenol) and steam.

5. Wash in distilled water for 30 seconds.

6. Flood slide with ammoniacal silver solution (5 Gm. silver nitrate in 100 ml. distilled water; remove several ml., add strong ammonia drop by drop until precipitate redissolves; then add drop by drop a sufficient amount of the silver nitrate solution to cause the formation of a slight cloud which persists in spite of shaking). Heat slide gently to steaming for 20 to 30 seconds.

7. Wash in several changes of distilled water.

8. Immerse slide in Coplin jar containing 0.2 % aqueous gold chloride solution. Immersion should not be prolonged beyond the time required to cause the brown color to disappear and the background to become pale lavender or gray.

9. Wash in distilled water.

10. Place slide in 5 % sodium thiosulfate for 2 minutes. This is a fixing solution, and prolongation of this step tends to cause fading of the stained spirochetes.

11. Wash in distilled water. Dehydrate in 95 % and absolute alcohols, clear in xylol, mount in Clarite and cover.

The background is colorless or light gray to lavender. The spirochetes stain a deep brown to black. The mordanting and silver solutions may be stored in clear-glass bottles in the open laboratory. Under these conditions they have retained their staining capacity for many months. They probably improve with ripening. (Am. J. Syph., Gonor, & Ven. Dis., May 1952, P. D. Rosahn & M. L. H. Freeman)

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Collection and Disposal of Human Wastes - Non-Water-Carriage Systems

The Subcommittee of the Committee on Sanitary Engineering and Environment of the National Research Council has released a report, "Collection and Disposal of Human Wastes - Non-Water-Carriage Systems." The report states that "a variety of methods are available for disposing of human wastes by other than water-carriage systems. They vary from the simple expedient of burial to complex methods of grinding, disinfection and dispersal. Some methods are centuries old, while others are as yet untried and in need of further research and investigation. Whatever methods are employed, due regard must be given to hazards to health, particularly as they concern the handling of wastes and the final disposal. Although it is relatively costly and complicated, disinfection is highly desirable when wastes will be exposed or where they are not finally disposed of by burying in the ground or by incineration."

The following recommendations were made by the Subcommittee:

1. Studies should be continued on the determination of the viability of intestinal disease organisms in stored feces, including time and temperature relationships.

2. The rate at which heat and chemicals penetrate feces in various forms and quantities is little known and should be investigated.

3. The feasibility and practicability of burning feces as a method of disposal with and without other combustible wastes, especially as it pertains to arctic conditions, is worthy of more complete research. (N. R. C. Div. Med. Sciences, Sept. 1951, L. K. Clark)

Chronic Mercury Poisoning in Latent Finger-Print Development

The history of industrial mercurialism and a review of the main industries concerned has been provided by Buckell and his colleagues (1946). To this list, however, there has recently been added another occupation which seems to carry a hazard of chronic mercury poisoning - namely, that of police finger-print expert.

An outbreak of chronic mercurialism in the Lancashire County (England) Constabulary Finger-print Department was reported by Agate and Buckell (1949). They found that of a staff of 32 men, 7 exhibited tremor with or without other evidence of mercurialism. The substance responsible for the Lancashire outbreak was "grey powder" (hydrargyrum cum creta, B.P), a preparation which is extensively used for the development of latent fingerprints. The present authors conducted a similar investigation in Sheffield.

"Grey powder" has been, for many years, the favorite substance used to develop latent finger-prints by all the police in England. Until the report of Agate and Buckell, there had been no suggestion that this process is dangerous. The clinical reports of Agate and Buckell and those detailed by the present authors, show that, while the risk of toxic symptoms arising is real, it is nevertheless small, because of differences in (1) individual susceptibility, and (2) the amount of care which is taken in using the powder to avoid contamination of the air, clothes, skin, etc. If powder is scattered indiscriminately over any surface which might possibly bear a finger-print, instead of being applied only to those surfaces where a potential print can be seen, then obviously the risk of poisoning is increased.

The weight of evidence in this investigation was against absorption by inhalation, in view of the speed with which the mercury globules fall out of the breathing area. This leaves open the possibilities that mercury vapor from spilled powder lying about in the workrooms may be inhaled, that the mercury may be absorbed through the skin or that it may be accidentally ingested after contamination of the hands. In view of the fact that in many chemical and physical laboratories metallic mercury is left lying about in cracks in the floor and in other inaccessible regions with impunity, the likelihood that the inhalation of mercury vapor is the answer seems small. The true answer may lie in a combination of absorption through the skin and accidental ingestion. If this is so, then because the B. P. 1932 formula powder deteriorates on standing by producing water-soluble mercury compounds, this form of the powder should be much more dangerous than the new form (B. P. 1948) in which oxidation is inhibited by the addition of dextrose. Owing to the small quantity of these substances present, it has not been possible to identify the compounds completely, although traces of sulphate were found in the extracts. The presence of sulphate in the extract suggests that impurities such as mercuric sulphide in the mercury may also play a part in the reaction, possibly by inducing electrolytic couples in the metal.

The 3 men of the Sheffield Police Photographic Department concerned in this inquiry, and those in the cases reported by Agate and Buckell, had all been using "grey powder" to develop latent finger-prints long before 1948, when the addition of 1 % dextrose was recommended to prevent oxidation of the finely

divided mercury. It is interesting to speculate whether such cases would now be likely to occur. In view of the fact that soluble-mercury compounds are so much more dangerous than the pure metal, it seems reasonable that the risk would be slightly reduced.

Now that it is known that there is a risk in the procedure, the use of the powder must be discontinued until the method of absorption has been accurately determined, and means of preventing it have been devised. The alternative of elaborating some non-toxic, equally effective substitute emerges, but, up to date, "grey powder" still holds the field as the preparation of choice for the development of latent fingerprints. (Brit. M. J., 26 April 1952, G. Forbes & J. White)

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March Fracture of the Tibia

Fifteen "march" fractures of the tibia are reviewed and illustrative cases presented by the author, who discusses the characteristic appearance, location and clinical course. The majority occurred in the proximal third of the diaphysis of the tibia with the remainder occurring in the middle third. In all cases the site of fracture was on the posteromedial aspect of the bone. This lesion, in its early stages, may resemble a neoplastic or inflammatory process. These fractures will be seen in considerable numbers in any of the military centers where new recruits are being given arduous basic training. Early diagnosis is possible and will preclude prolonged observation, or conceivably biopsy, and insure prompt and adequate treatment.

The onset of symptoms in military cases normally occurs during the first few weeks of basic training and is commonly noted following a prolonged road march with full pack. Symptoms were commonly present for several days before roentgenograms were requested. Findings on physical examination are quite characteristic and consist of deep localized tenderness, usually with edema, over the site of the lesion, followed by a bony swelling as the callus develops. In no case was there fever, evidence of localized inflammation, or other sign of an infectious process. No patient showed any evidence of a systemic disease or other abnormality of the extremity which could be considered to be a predisposing factor.

Roentgenographic aspects. The appearance of this lesion is quite characteristic and permits early diagnosis if recognized. In the majority of cases the fracture was in the proximal third of the shaft of the tibia; all were on the posteromedial aspect. The fracture line varied from a barely visible irregular line of decreased density extending only a short distance through the cortex on one side to a complete fracture, though there was never significant displacement of the fragments. Periosteal new bone formation was demonstrable in all but 2 cases at the time of the initial examination, though in several it was so very faint that it could be demonstrated only by technically near-perfect films. In one instance, the fracture line could only be seen when the extremity was in a particular position of obliquity, but the periosteal new bone formation was quite visible in the routine views. Two cases showed a "laminated" appearance of the periosteal new bone.

In the early cases, a small localized area of "fraying out" of the margin of the cortex was commonly noted at the initial examination. Subsequently, the fracture line and callus became much more apparent. In 2 cases bilateral fractures occurred. Ten fractures were on the right, and 7 on the left. In 1 instance, callus was demonstrated on the lateral aspect of the fibula at the same level as the tibial fracture, but no fracture line was demonstrated in the former. It is possible initially to confuse the radiographic appearance of this lesion with that of an infectious or neoplastic process. During the period in which these 15 cases of tibial fractures were collected, 2 cases of march fracture of the fibula, 2 of the os calcis and 1 of the femur were observed. Over 200 cases of march fracture of the metatarsals have been seen in the same group of troops during a like period.

Treatment consisted of immobilization in a plaster cast for approximately 6 weeks, followed by physiotherapy and graduated exercise, with return to duty in 2 to 3 months. An occasional patient had persistent tenderness and required immobilization for a slightly longer period.

Dew and Wooten reported (1944) a marked decrease in incidence of march fractures of the feet following a gradual increase in length of the marches and of the weight of the equipment carried, and on marching on soft ground. The same prophylactic procedures should apply for march fractures of the tibia. (Radiology, May 1952, P. W. Wells, Colonel (MC) USA)

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The Medical Aspect Aboard the Snow-Bound Streamliner, "City of San Francisco"

Civilian disaster occurs with sufficient frequency to justify a reappraisal of the physician's role in such emergencies. In every such disaster, physicians frequently find themselves in the center of organization of relief, simple public health regulations and first-aid treatment. Regardless of a physician's specialty, he may be called upon to perform any type of service required; and, it is highly important that any physician under such circumstances accept fully his responsibility to the victims of such a disaster and his responsibilities as a physician. In such a crisis people are not impressed by a limited specialty, but expect some manner of relief regardless of any limitation of practice. It was in such a position that the author found himself in January, 1952.

A train, City of San Francisco, became snowbound in the high Sierras at about Yuba Pass early in the morning of Sunday, January 13, 1952. Though the situation was not pleasant, it did not become critical until the following morning when it was realized that the heat in the cars had become exhausted during the night and that the batteries for lighting had become exhausted. It was then apparent that disaster was developing and certain steps must be taken at once to prevent if possible any further deterioration of the situation.

A group of passengers was apprised of the situation and a committee was set up to evaluate the problem and to formulate some semblance of policy. An appraisal of the milk supply was made and the supply was held exclusively for the

use of small children and infants aboard the train. The available food supply was appraised and it was determined that by careful management by the dining car stewards that this would be sufficient for several days.

The lack of heat was compensated by the people themselves - keeping their clothing on at all times and wrapping themselves in blankets. Many people congregated in the lounge car and in this manner some body heat was conserved.

The danger of an epidemic of upper respiratory infection was eliminated by the isolation of such cases and at no time was the incidence of these more than 3 or 4 cases.

The batteries for lighting had become exhausted; however, two of the pullman cars were equipped with propane gas generators for recharging the batteries and on Monday evening the generators were started. By this time, due to the lack of any means for communication, the feeling of uncertainty, the altitude and a mild form of hysteria, a great many people were becoming quite nervous and tense. These people were placed in the cars with the auxiliary lighting so they could be carefully observed. During the night about 20 or 25 of them became violently ill. This illness was manifest by a sensation of nausea, vomiting, severe headache, incontinence of bowels and, in a few instances, loss of consciousness.

During the early morning it was realized that some carbon monoxide was probably finding access to the cars through the generators and their use was discontinued. The affected people were given fresh air which by that time had become somewhat of a rare commodity. This was due to the fact that the snow had completely covered many of the cars. The upper vestibule doors were opened and apparently sufficient air was changed so that in an hour the unconscious had regained consciousness and, with the exception of some residual headaches and moderate nausea, all passengers were out of danger.

The problem of sanitation became acute by Tuesday. Conservation of the water supply was necessary. This was accomplished by using the toilet facilities in only one car at a time and using the toilet facilities in the next car only when the first had used all of its available water supply. Sufficient drinking water was present at all times.

The conservation of energy on the part of the passengers was carried out by prohibiting the indiscriminate use of alcohol and its resulting simulated stimulation. From Monday evening until the rescue was effected, no alcohol was permitted.

The use of tobacco in the lounge car was discouraged; however, it was not entirely prohibited in the vestibules and in the day coaches.

Ventilation of the cars without chilling them further was effected by opening a few of the upper vestibule doors 5 minutes out of each hour.

Personal injuries were prevented to a great extent by most people remaining in their seats at all times. Aimless wandering through the train was discouraged.

Medical problems, particularly those of anxiety, would have been much more simple to handle had there been any form of communication. The lack of news was very discouraging and the feeling of uncertainty was constantly present. In this particular disaster no passenger carried a portable radio which of course would have apprised the passengers of the tremendous rescue effort which was going on.

This in a great way would have aided their comfort.

The fact that severe disaster did not occur is in no way due to any heroic or unusual practice, but rather, due to the fact that rescue operations were successfully carried out as quickly as possible.

As in any emergency, certain individuals either by their training or their personalities, react quickly and can be of tremendous value to the physician. In this particular situation, certain members of the train crew, a colonel in the United States Army, an ensign in the United States Navy, certain business executives, and 4 or 5 nurses volunteered their services and worked long hours, with patience and kindness at all times, administering aid to those less fortunate than themselves. (Ohio State M. J., May 1952, W. H. Roehll)

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Research on Acute Respiratory Diseases in the U. S. Navy

"Acute respiratory diseases" or "acute respiratory infections", although rarely fatal or a cause of permanent disability, are the greatest single cause of illness and of industrial and military absenteeism in the United States today. Each of the 155,000,000 people in the United States will average 3 or more "colds" per year. Research has increased knowledge in diagnosis and treatment, but relatively little progress has been made in methods for prevention.

Influenza, streptococcic infection and certain pneumonias can be diagnosed readily and those caused by bacteria usually respond well to treatment with penicillin or the newer antibiotics. However, the vast majority of the acute respiratory infections appear to be caused by unidentified viruses against which these drugs have little or no effect.

The Armed Forces have a vital interest in the rapid evaluation and development of new methods for prevention and treatment of these infections. Under conditions of mobilization of military forces, acute respiratory infections are transmitted rapidly and widely and the more severe diseases tend to become epidemic. Those particularly hard hit are newly recruited men and personnel in training.

In World War II, research and epidemiological teams successfully controlled such infectious diseases as epidemic meningitis and pneumonia. A vaccine against influenza was developed and was very successful in 1944-45 (but ineffective in 1947 when the epidemic was caused by a new type of virus). While sulfonamide drugs reduced streptococcal infections in 1943-44 by 25 % their future use would be limited to very short periods by the reappearance of resistant strains.

The Bureau of Medicine and Surgery felt it imperative to continue research studies during the post-war years. NAMRU-4, originally formed (1948) for research on rheumatic fever, was given additional duty in improving methods of detecting and preventing epidemics of acute respiratory diseases. Among the foremost methods advocated for preventing these infections were ultra-violet lights and tri-ethylene glycol vapor.

Ultra-violet lights were installed in recruit barracks and other buildings to kill air-borne bacteria and viruses which are coughed, sneezed or expelled

during talking by infected men. During 6 years of testing, it was established that while the lights killed many bacteria in the air, they were only slightly effective in reducing the number of men hospitalized with respiratory infection. In 1949 this method of investigation was halted as impractical to the Navy.

Tri-ethylene glycol vapor also proved disappointing. Despite great reductions in the number of bacteria in the air, it did not prevent epidemics of colds, influenza or streptococcal infections.

Antihistamines were proved unable to prevent colds or their complications, and were ineffective in the treatment of colds. These results were later confirmed in civilian populations by other groups, but NAMRU-4 was credited editorially by 4 leading medical journals for the evidence it presented in the proper evaluation of these drugs with reference to colds.

Antibiotics study began in 1951, is still in progress and cannot as yet be evaluated. NAMRU-4 was able to show that a single dose of 100,000 units of penicillin by mouth was effective in almost completely preventing the spread of epidemic streptococcal infections. It is probable that even smaller doses may work as effectively. Already the method is economical, practical and a sound means of preventing rheumatic fever. The big remaining problem is that of bacteria developing a resistance to penicillin.

Vaccines against influenza and mumps also are being studied. For mumps, it was learned that a dose of 1 cc. was necessary to get the maximum antibody stimulation and that larger doses gave no greater stimulation. The reaction rate was negligible.

The practical result of NAMRU-4 research was the saving of millions of dollars to the Navy in proving the ineffectiveness of tri-ethylene glycol vapor, ultra-violet light and antihistamines, and the value of small doses of penicillin against streptococcal infections. (Preventive Med. Div., BuMed)

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Studies in Short-Duration Auditory Fatigue IV. Recovery Time

Auditory fatigue was studied by introducing a stimulating tone, then allowing a short recovery period, and subsequently introducing a very brief test or probe tone. The effects of stimulus intensity, recovery time and frequency were documented.

Results showed the ear to recover rapidly; if the stimulating tone is 70 db above threshold (roughly the intensity of average speech) recovery is complete within about one-third of a second. This bears upon the speed with which the ear can receive bits of information. The absolute amount of fatigue depends primarily upon the intensity of the stimulating tone, not its frequency.

From analysis of the recovery time it would seem that fatigue is of peripheral origin rather than a function of nervous centers. (NM 003 041.34.03, M. R. L., U. S. Naval Submarine Base, New London, Conn., 30 Jan. 1952, A. Rawnsley & J. D. Harris)

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Navy Hospitalman Awarded Medal of Honor Posthumously

Richard David De Wert, Hospitalman, USN, of Taunton, Massachusetts was awarded a Medal of Honor posthumously for "conspicuous gallantry and intrepidity" in a ceremony at the Pentagon on 27 May 1952.

Secretary of the Navy Dan A. Kimball presented the Medal to his mother, Mrs. Evelyn De Wert Jones, who resides at Seward, New York.

Mrs. Jones was accompanied by her husband, Joseph C. Jones, and her brother, Albert G. Doherty, of 5103 111th Street, Corona, Long Island, New York.

On April 5, 1951, the 19-year-old medical corpsman, serving with "D" Company, 2nd Battalion, 7th Regiment of the First Marine Division, exposed himself to rifle fire while aiding four wounded Marines. The company was in action northeast of Chunchon. Although twice wounded, he refused medical aid.

Despite his wounds, and the heavy enemy fire, De Wert went to the aid of the fourth Marine. While he was trying to administer to this man, De Wert was killed.

Hospitalman De Wert, born in Taunton, November 17, 1931, was a member of the Taunton High School Cadet Corps prior to his entry into service in December 1948.

Following recruit training, he was assigned to the Hospital Corps School, Great Lakes, Illinois, and subsequently to the U. S. Naval Hospital, Portsmouth, Virginia. He served with the Fleet Marine Force, Pacific, from July 28, 1950, until the time of his death in Korea. (PIO, Dept. Def., 27 May 1952)

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NAVMED P-1333

"Instructors' Guide--Sanitary Food Service," NavMed P-1333, which has been the subject of a nationwide introductory tour at naval installations in the past 2 months, will be furnished all ships and stations having a medical department representative, when it becomes available. Requests for this Guide are not indicated. (Preventive Med. Div., BuMed)

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Present Status of Certification in Aviation Medicine

At the request of the Interim Board on Aviation Medicine and with the encouragement of the Advisory Board for Medical Specialities, the American Board of Preventive Medicine and Public Health has given consideration over the past 18 months to the possibility of association of preventive medicine and aviation medicine as a specialty certifying board, and a proposed affiliation was developed. Under the terms of this proposal, the American Board of Preventive Medicine and Public Health would become the American Board of Preventive Medicine, sponsored, in addition to the sponsorship of the original Board, by the appropriate professional associations in aviation medicine. Under this reorganization, it was

proposed that candidates might be examined and certified in either (a) public health or (b) aviation medicine, the standards for examination and certification in public health to remain essentially as at the present time while the standards for examination and certification in aviation medicine to be such as to meet the basic standards established by the Advisory Board for Medical Specialities. The proposed special training to be required in aviation medicine for eligibility for examination were as follows:

1. Successful completion of 2 academic years of graduate study in (a) the elements of preventive medicine, (b) the basic sciences applicable to aviation medicine and (c) aviation medicine, at least 1 academic year of which study to be pursued in a school, college or university accredited for the purpose of such graduate study by the Council on Medical Education and Hospitals of the American Medical Association or by the American Public Health Association.
2. At least 1 year of approved residency training in aviation medicine, and
3. A minimum of 6 years of academic training, residency training or practical experience in aviation medicine subsequent to the intern year which includes 1 and 2 above.

This proposal was reviewed by the Advisory Board for Medical Specialities at its meeting on February 10, 1952. After hearing the proposal as presented by the representatives of the American Board of Preventive Medicine and by the Interim Board of Aviation Medicine, the Advisory Board for the Medical Specialities voted to disapprove the proposal at the present time for the following reasons:

1. There are at the present time only 2 training centers where acceptable training in aviation medicine can be obtained, both of which are military. There are no civilian training centers in aviation medicine at this time.
2. The specialized training requirements as previously outlined were not sufficiently defined nor was there adequate assurance of qualified supervision.
3. There was objection to the restriction of applicants for examination to members of a single medical group such as the Aero Medical Association.

After further discussion, it was unanimously voted that the Advisory Board for Medical Specialities approve in principle the proposal cited above but that no certificates be issued in aviation medicine until such time as the previously outlined deficiencies in the training program in aviation medicine be adequately corrected and brought back to the Advisory Board for Medical Specialities for approval.

Accordingly, the American Board of Preventive Medicine and Public Health amended its articles of incorporation and by-laws, changing the name of that Board to the American Board of Preventive Medicine and provision was made for additions to the Board membership representing aviation medicine. Since the February meeting, the Interim Board of Aviation Medicine has received proposals from 3 universities for the development of specialized training programs in aviation medicine. Plans and facilities for both military and civilian residency training programs have been developed. It is hoped that an application for approval of these residency training programs can be submitted to the Council on Medical Education and Hospitals of the American Medical Association in the near future. It should be emphasized that no certification in aviation medicine is contemplated

until such time as the Advisory Board for the Medical Specialties indicate approval of the training facilities that are being developed. (Am. Bd. Prev. Med. & Pub. Health, 25 April 1952.

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Training Course for Inactive Volunteer Naval Reserve Medical Corps, Medical Service Corps and Hospital Corps Officers in Amphibious Medicine

A training course of 2 weeks' duration for Naval Reserve MC, MSC and HC officers in Amphibious Medicine is scheduled to convene on Monday, 7 July 1952 and continue to 19 July 1952 at the Amphibious Training Command, U. S. Naval Amphibious Base, Little Creek, Virginia.

The purpose of this course is to familiarize inactive Volunteer Naval Reserve MC, MSC and HC officers in amphibious operations in general, and the medical aspects thereof in particular. The course consists of lectures, training films, demonstrations and practical exercises to familiarize the officers with the nature of the medical service provided in amphibious operations. The embarkation, underway and debarkation phases of the medical service are dealt with, and medical supply problems are presented.

Officers concerned should provide themselves with fatigue or utility-type uniform equipment for participation in the practical aspects of this course. Meals and sleeping quarters will be available at the Bachelor Officers' Quarters for those officers who desire such accommodations.

The 1st, 3rd, 4th, 5th, 6th, 8th, 9th Naval Districts, and the Potomac River Naval Command have been assigned quotas for this course.

Inactive Volunteer Reserve MC, MSC and HC officers are encouraged to take advantage of the opportunity to attend this course on active training duty orders in a pay status. Officers who desire to attend this course should submit their request to the Commandant of their home naval district at the earliest practicable date. (Reserve Div., BuMed)

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List of Recent Reports Issued by Naval Medical Research Activities

U. S. Naval School of Aviation Medicine, U. S. Naval Air Station, Pensacola, Fla.

Ten Year Follow-up Study of One Thousand Aviators, NM 001 057.05.01, 12 March 1952.

Non-Test Predictors of Attrition in the Naval Air Training Program, NM 001 058.05.02, 28 April 1952.

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From the Note Book

1. The symposium of the Surgeon General of the Navy with members of the Medical Department field activities was held from 4 to 6 June 1952, at the National Naval Medical Center, Bethesda, Maryland. The symposium, held annually, circumstances permitting, affords an opportunity for the District Medical and Dental officers and Commanding Officers of the Naval medical and dental field activities to meet and discuss current policies and problems with Division operation officers of the Bureau of Medicine and Surgery. The agenda included: personnel procurement; research in naval hospitals; medical records management and hospital financial management. Discussions were also held on the graduate training policy; promotions; the status of the medical supply system; wartime dentistry and combat medicine; the reserve personnel programs; preventive medicine; industrial medicine and hospital safety; the Code of Military Justice, and manpower controls and utilization. The latest developments in the field of military medicine also were presented. (TIO, BuMed)

2. RADM H. L. Pugh, Surgeon General of the Navy, has again been elected an Honorary Director of the American Foundation for Tropical Diseases. (TIO, BuMed)

3. Recent faculty appointments in the University of Pennsylvania include most of the Officer Staff of the Aviation Medical Acceleration Laboratory at the Naval Air Development Center (Johnsville, Pennsylvania) which is affiliated with the University. These medical officers have contributed in research and teaching to the University and the faculty appointments were extended to them in recognition of academic attainment and responsibility: CDR C. F. Gell (MC) USN, Asst. Professor of Physiology, School of Medicine and Lecturer in Physiology, Graduate School of Medicine; LCDR E. L. Beckman (MC) USN, Associate in Physiology, School of Medicine and Research Fellow, Graduate School of Medicine; LT T. D. Duane (MC) USNR, Associate in Physiology, School of Medicine; LT J. E. Ziegler (MC) USN, Instructor in Physiology, School of Medicine; CAPT O. L. Slaughter (MC) USAF, Instructor in Physiology, School of Medicine; 1st LT R. L. Wechsler (MC) USA, Instructor in Physiology, School of Medicine and Research Fellow, Graduate School of Medicine. (Av. Med. Accel. Lab., U. S. NADC, Johnsville, Pa.)

4. The value and limitations of the portable ballistocardiograph in the detection of heart disease are discussed in Industrial Medicine and Surgery, May 1952, S. C. Franco.

5. The successful surgical removal of a primary lipoma of the heart is reported in the Journal of Thoracic Surgery, May 1952, by E. R. Maurer.

6. Two cardinal principles in the surgery of parotid gland tumors are: the complete removal of the growth and avoidance of injury to the 7th nerve. The best method of avoiding such injury is the routine exposure and identification

of the nerve first, before proceeding with the actual removal of the tumor. The form of skin incision and the operative technic for parotid tumors with preservation of the 7th nerve is described. (Surgery, May 1952, H. Martin)

7. Ethyl chloride spray is at times very effective in acute myofascial pain and also in acute visceral pain. Successful results with this agent depend on (1) recognition of the pain reference patterns of the skeletal muscles; (2) knowledge of the anatomy and function of individual muscles and groups of muscles; (3) skill in executing a precise technic; (4) ability to get the patient to relax adequately during the spraying and to cooperate in carrying out active motion at the time of treatment and subsequently. (Arch. Phys. Med., May 1952, J. Travell).

8. In the treatment of burns the "rule of nines" simplifies the estimation of surface areas of the body. Each arm and the head and neck are approximately 9 %. Each leg and the front and back of the trunk are each 2 times 9 %. The perineum and genitalia bring the total to 100 %. (Brit. M. J., 10 May 1952, J. P. Bull & D. M. Jackson)

9. In 1945 there were 411,600 cases of malaria in Italy; during the first half of 1951 there were only 392 cases in the entire nation and not a death has been reported from the disease in the past 3 years. (Scientific American, June 1952, P. F. Russell)

10. A concise article on the insecticides and rodenticides recommended for use in 1952 appears in Public Health Reports, May 1952. (CDC, PHS, Savannah, Ga.)

11. Retrolental fibroplasia affects the eyes of premature infants of low birth weight. The etiology is undetermined and no treatment has so far been markedly effective. Vitamin E has been used prophylactically but results are still inconclusive. Sufficient data on the use of ACTH is not yet available to determine its place in the treatment. (Postgrad. Med., May 1952, E. W. Hansen)

12. CDR R. R. Sullivan (MSC) USN, Head of the Optometry Branch, Professional Division, BuMed., received the degree of Doctor of Ocular Sciences, 25 May 1952, from the Northern Illinois College of Optometry. (TIO, BuMed)

13. Five Navy nurses were graduated on May 29 from the Aero-Medical Nursing Course, USAF School of Aviation Medicine, Gunter Branch, Gunter Air Force Base, Alabama. (TIO, BuMed)

14. The following Navy medical officers have recently been certified in their specialities by American Boards. LCDR B. K. Black (MC) USN, certified in pathologic anatomy by the American Board of Pathology; LT W. L. Chapman (MC) USN, American Board of Internal Medicine. (TIO, BuMed)

15. The treatment of choice in Wilms' tumor of infancy and childhood seems to be a combination of surgery and irradiation, though differences of opinion exist as to the sequence of the two measures. (Radiology, May 1952, W. Benzing, Jr.)

16. A new staining method for trachoma bodies called "staining with citrate methylene blue" is described in American Journal of Ophthalmology, Part I, May 1952, L. Poleff, Rabat, Morocco)

17. A study of the late prognosis of 27 cases of acute glomerulonephritis in childhood appears in the Journal of Pediatrics, May 1952, H. J. Hebert.

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Training Courses for Volunteer Naval Reserve Medical Corps, Medical Service Corps and Hospital Corps Officers in Malariology and Insect Control

Training courses of 2 weeks duration for Volunteer Naval Reserve MC, MSC and HC officers in Malariology and Insect Control are scheduled to convene on the first and third Wednesday of each month at the U. S. Navy Malariology and Mosquito Control Unit, U. S. Naval Air Station, Jacksonville, Florida, during the first quarter, fiscal year 1953.

The purpose of these courses is to provide information and technics to be employed in insect control and practical field experience which are not readily available to Volunteer Naval Reserve MC, MSC and HC officers in their civilian occupation, yet invaluable to their function in the event of mobilization

The working uniform is khaki, and it is desirable that all personnel have dress uniform and civilian dress available while on duty. Meals and sleeping quarters will be available at the Bachelor Officers' Quarters for those officers who desire such accommodations. Motor courts are usually available near the Naval Air Station for use of personnel under training if they are accompanied by dependents.

The 1st, 3rd, 4th, 5th, 8th, 9th Naval Districts have been assigned quotas for these courses for the first quarter, fiscal year 1953.

Inactive Volunteer Reserve MC, MSC and HC officers are encouraged to take advantage of the opportunity to attend these courses on active training duty orders in a pay status. Officers who desire to attend these courses should submit their request to the Commandant of their home naval district at the earliest practicable date. (Reserve Div., BuMed)

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Change of Address

Please forward requests for change of address for the News Letter to: Commanding Officer, U. S. Navy Medical School, National Naval Medical Center, Bethesda 14, Maryland, giving full name, rank, corps and old and new addresses.

BUMED CIRCULAR LETTER 52-46 20 May 1952

From: Chief, Bureau of Medicine and Surgery
To: All Ships and Stations

Subj: BUMED circular letters; cancellation of several

The following BuMed Circular Letters are cancelled:

46-10, 46-160, 49-144, 49-145, 50-16, 50-85, 51-48, 51-114, and 52-16.

This letter shall be considered cancelled when compliance is noted.

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BUMED CIRCULAR LETTER 52-47 22 May 1952

From: Chief, Bureau of Medicine and Surgery
To: All Shore Stations having Medical and/or Dental Facilities

Subj: Annual Estimate of Expenditures, Fiscal Year 1953, Appropriation 1731002, Medical Care, Navy, 1953

Ref: (a) BUMED Cir Ltr 51-74
(b) BUMED Cir Ltr 52-15
(c) BUMED Cir Ltr 52-24
(d) OPNAV INSTRUCTION 7100.2, Ltr OP-443 Serial 1805P44 of 6 June 1951

Encl: (1) Instructions for preparation of Annual Estimates of Expenditures by activities under the management control or financial responsibility of the Bureau of Medicine and Surgery.
(2) Instructions for preparation of Annual Estimates of Expenditures by activities not under the management control or financial responsibility of the Bureau of Medicine and Surgery.

1. Reference (a) is cancelled effective 1 July 1952.

2. In previous fiscal years individual station allotments have been issued only to activities whose requirements for the fiscal year under the appropriation, Medical Care, Navy, exceeded $200 under each program. Activities whose requirements were less than $200 have been authorized to obligate and expend funds under a Bureau-controlled allotment. In Fiscal Year 1953 no activity will be authorized to obligate and expend funds against a Bureau-controlled allotment. Each activity requiring funds under the appropriation 1731002, Medical Care, Navy, 1953, must have an approved Allotment Authorization, NAVEXOS-2674, issued by the Bureau

of Medicine and Surgery, for each program required except those activities specifically exempted by this letter.

3. In Fiscal Year 1953 separate allotments will not be granted for the medical department and the dental department when both are located at the same activity. Those dental activities under the management control of the Bureau, i. e. naval dental clinics and dental technician schools will, however, be issued individual allotments. Therefore, one (1) allotment will be issued to cover the requirements of the medical and dental departments under the title of "Medical and Dental Care". Beginning with Fiscal Year 1953 the following dental department allotment numbers will be cancelled and combined to form "medical and dental" allotments, as follows:

Dental Allotment Numbers cancelled	and	Combined with Allotment Number	Titled
18		16	Medical and Dental Care in Naval Hospitals
19		17	Medical and Dental Care in Specialized Medical and Dental Facilities
22		20	Medical and Dental Care in Shore Stations
36		34	Medical and Dental Consultants in Medical and Dental Facilities
40		38	Instruction of Medical and Dental Department Personnel in Naval Facilities
44		42	Instruction of Medical and Dental Personnel in Nonnaval Facilities
52		50	Medical and Dental Research in Naval Facilities (Direct)
56		54	Medical and Dental Research in Nonnaval Facilities

Funds required for the dental department shall be included in the request for funds under the allotment number formerly assigned to the medical department and now redesignated "medical and dental". Examples:

(1) Hospitals requiring funds for the dental department will include dental requirements under Program 16---, "Medical and Dental Care in Naval Hospitals".

(2) Activities not under management control of the Bureau of Medicine and Surgery, such as - naval air stations, naval shipyards, naval receiving stations, naval ammunition depots, and Marine Corps activities requiring funds for the dental department shall include dental requirements under Program 20 ---, "Medical and Dental Care in Shore Stations."

In combining the requirements for "medical and dental care" the amount of funds for medical and dental shall be set forth in such a manner that the medical and dental requirements may be distinguished from one another.

4. Activities under the management control or financial responsibility of the Bureau of Medicine and Surgery shall prepare an informal annual estimate of expenditures for Fiscal Year 1953, under the appropriation 1731002, Medical Care, Navy, 1953, in accordance with instructions in enclosure (1). These instructions are modified at naval hospitals to the extent that QUARTERLY estimates shall be submitted in accordance with instructions in enclosure(1) for funds required under maintenance and operation allotments (program 16) only. These quarterly estimates shall be submitted to reach the Bureau 60 days prior to the quarter for which funds are requested except for first quarter, Fiscal Year 1953 requests submitted in accordance with this letter.

5. Those naval stations listed in reference (d) shall prepare an informal annual estimate of expenditures for Fiscal Year 1953, under the appropriation 1731002, Medical Care, Navy, 1953, in accordance with instructions in enclosure (1).

6. Activities not under the management control or financial responsibility of the Bureau of Medicine and Surgery shall prepare an informal annual estimate of expenditures for Fiscal Year 1953, under the appropriation 1731002, Medical Care, Navy, 1953, in accordance with instructions in enclosure (2).

7. Informal annual estimates of expenditures for Fiscal Year 1953, under the appropriation 1731002, Medical Care, Navy, 1953, shall be submitted in accordance with instructions in enclosure (2) by the following activities:

U. S. Naval Medical Material Office, Brooklyn, N. Y.
U. S. Naval Medical Supply Depot, Edgewater, N. J.
U. S. Naval Medical Supply Depot, Oakland, Calif.

These estimates shall include only those functions and services for which the medical department will be responsible when management control of the activity is assumed by the Bureau of Supplies and Accounts.

8. The instructions contained in this letter are not applicable to U. S. Navy recruiting stations. Recruiting activities shall be guided by the instructions set forth in the Recruiting Service Manual.

9. Estimates of expenditures for Fiscal Year 1953 shall be submitted to reach the Bureau as soon as possible but in no case later than 15 June 1952.

H. L. Pugh

The above letter will not be printed in the Navy Department Bulletin.

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BUMED CIRCULAR LETTER 52-48 26 May 1952

From: Chief, Bureau of Medicine and Surgery
To: District and Selected Staff Medical Officers

Subj: Medical Activities Status Report, MED-6030-1; (formerly Med-016) modification of

Ref: (a) Art 23-110 ManMedDept.

This report in quadruplicate, prepared by District and Staff Medical Officers only, submitted quarterly, includes data regarding every shore activity of the Navy having medical facilities under the jurisdiction of the reporting administrative command other than dental facilities and naval hospitals. The report is in letter form and according to a prescribed format. BuMed Circular Letter 52-48 will not be published in the Navy Department Bulletin.

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BUMED CIRCULAR LETTER 52-49 26 May 1952

From: Chief, Bureau of Medicine and Surgery
To: All Ships and Stations Having Medical Department Personnel Aboard

Subj: Instructions Covering Individual Statistical Report of Patient (NavMed-F) P-1313; revision of

1. The present system of NavMed-F card reporting, which has been in use since 1949, has proved satisfactory. It is believed, however, that certain minor changes

in the manner of reporting as well as clarification of existing instructions governing NavMed-F reporting are now in order.

2. Constructive criticisms and suggestions for the revision of NavMed P-1313 particularly from personnel concerned with making entries in the Health Record and preparing NavMed-F cards will be welcomed and should be forwarded to the Bureau as quickly as possible.

3. This letter shall be considered cancelled when no longer of use to addressee.

H. L. Pugh

The above letter will not be printed in the Navy Department Bulletin.

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BUMED CIRCULAR LETTER 52-50 28 May 1952

From: Chief, Bureau of Medicine and Surgery
To: All Ships and Stations

Subj: Handbook of the Hospital Corps

Ref: (a) BUMED CirLtr No. 52-23; NDB 15 Mar 1952, 52-115, p. 8

1. Reference (a) is canceled.

2. Pursuant to reference (a) a substantial redistribution of remaining stocks of the 1939 edition of the Handbook of the Hospital Corps has been effected. In the process of recovering surplus stocks from some activities a reserve of unassigned copies has been created which the Bureau now desires to distribute to those points where copies of the Handbook are most needed. Therefore, further letter requests from activities desiring additional copies of the 1939 edition will be promptly honored by the Bureau within the limits of available copies.

3. It is anticipated that the new edition of the Handbook of the Hospital Corps will be available for distribution late in calendar year 1952 at which time copies will be forwarded to addressees having Hospital Corps personnel aboard, without request for distribution on a ship and station basis. No personal copies will be supplied, but will be available for purchase through the Superintendent of Documents, Washington 25, D. C.

H. L. Pugh

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